WHAT IS CLAIMED IS:

1. An isolated nucleic acid sequence encoding a microtubule motor protein, wherein the protein has the following properties:

(i) the protein's activity includes plus end-directed microtubule motor activity; and

(ii) the protein has a tail domain that has greater than 60% amino acid sequence identity to a TL-γ tail domain as measured using a sequence comparison algorithm.

2. An isolated nucleic acid sequence of claim 1, wherein the protein specifically binds to polyclonal antibodies to TL-γ.

3. An isolated nucleic acid sequence of claim 1, wherein the nucleic acid encodes TL-γ.

4. An isolated nucleic acid sequence of claim 1, wherein the nucleic acid encodes SEQ ID NO:1.

5. An isolated nucleic acid sequence of claim 1, wherein the nucleic acid has a nucleotide sequence of SEQ ID NO:2.

6. An isolated nucleic acid sequence of claim 1, wherein the sequence comparison algorithm is PILEUP.

7. An isolated nucleic acid sequence of claim 1, wherein the nucleic acid is amplified by primers that selectively hybridize under stringent hybridization conditions to the same sequence as the primer set:

5' ATGTCGGGCGGTGGAAATATC 3' (SEQ ID NO:3)

5' GAATTCCTGCTTCGCTGTTTTCA 3' (SEQ ID NO:4)

8. An isolated nucleic acid sequence of claim 1, wherein the nucleic acid has identity to a Tl-γ derived from a hyphal fungi.

9. An isolated nucleic acid sequence of claim 8, wherein the nucleic acid has identity to a TL-γ derived from *Thermomyces lanuginosus*.

10. An isolated nucleic acid sequence of claim 1, wherein the nucleic acid selectively hybridizes under stringent hybridization conditions to SEQ ID NO:2.

11. An expression vector comprising a nucleic acid encoding a microtubule motor protein, wherein the protein has the following properties:

(i) the protein's activity includes plus end-directed microtubule motor activity; and

(ii) the protein has a tail domain that has greater than 60% amino acid sequence identity to a TL-γ tail domain, as measured using a sequence comparison algorithm.

12. A expression vector of claim 11, wherein the protein specifically binds to polyclonal antibodies to TL-γ.

13. A host cell transfected with the vector of claim 11.

14. An isolated microtubule motor protein, wherein the protein has the following properties:

(i) the protein's activity includes plus end-directed microtubule motor activity; and

(ii) the protein has a tail domain that has greater than 60% amino acid sequence identity to a TL-γ core tail domain as measured using a sequence comparison algorithm.

15. An isolated protein of claim 14, wherein the protein specifically binds to polyclonal antibodies to TL-γ.

16. An isolated protein of claim 14, wherein the protein is TL-γ.

17. An isolated protein of claim 14, wherein the protein has an amino acid sequence of SEQ ID NO:1.

18. An isolated protein of claim 14, wherein the protein has identity to a TL-γ derived from a hyphal fungi.

19. An isolated protein of claim 18, wherein the protein has identity to a TL-γ derived from *Thermomyces lanuginosus*.

20. An isolated protein of claim 14, wherein the protein specifically binds to polyclonal antibodies generated against a tail domain of TL-γ.

21. An isolated protein of claim 20, wherein the protein comprises an amino acid sequence of a TL-γ motor domain of SEQ ID NO:1.

22. An isolated protein of claim 14, wherein the sequence comparison algorithm is PILEUP.

23. An antibody which specifically binds to TL-γ.

24. An antibody of claim 23, wherein the antibody specifically binds to a tail domain of TL-γ.

25. An antibody of claim 23, wherein the antibody specifically binds to a motor domain of TL-γ.

26. An antibody of claim 23, wherein the antibody specifically binds to a stalk domain of TL-γ.

27. An antibody of claim 23, wherein the antibody is a humanized antibody.

28. An antibody of claim 23, wherein the antibody is a chimeric antibody.

29. A method for diagnosing hyphal fungal infections by detecting the presence of TL-γ in a sample, the method comprising the steps of:

(i) obtaining a biological sample;

(ii) contacting the biological sample with a TL-γ specific reagent that selectively associates with TL-γ; and,

(iii) detecting the level of TL-γ specific reagent that selectively associates with the sample.

30. A method of claim 29, wherein the TL-γ specific reagent is selected from the group consisting of: TL-γ specific antibodies, TL-γ specific oligonucleotide primers, and TL-γ nucleic acid probes.

31. A method of claim 29, wherein the sample is from a human.

32. A method of claim 29, wherein the sample is from an animal.

33. A method of claim 29, wherein the TL-γ specific reagent is part of a gene or protein array.

34. A method for screening for modulators of TL-γ, the method comprising the steps of:

(i) providing biologically active TL-γ, wherein the TL-γ has the following properties

(a) the protein's activity includes plus end-directed microtubule motor activity; and

(b) the protein has a tail domain that has greater than 60% amino acid sequence identity to a TL-γ tail domain as measured using a sequence comparison algorithm;

(ii) contacting biologically active TL-γ with a candidate agent in a test and control concentration; and

(iii) assaying for the level of TL-γ activity, wherein the TL-γ activity plus end-directed microtubule motor activity, binding activity or ATPase activity, and wherein a change in activity between the test and control concentration indicates a modulator.

35. A method of claim 34, wherein the protein specifically binds to polyclonal antibodies to TL-γ.

36. A method of claim 34, further comprising the step of isolating biologically active TL-γ from a cell sample.

37. A method of claim 34, wherein the biologically active TL-γ is recombinant.

38. A method of claim 34, wherein the biologically active TL-γ has identity to a TL-γ derived from *Thermomyces lanuginosus*.

39. A method of claim 34, wherein the candidate agent is selected from the group consisting of antibodies, proteins, oligonucleotides and small molecules.

40. A method of claim 34, wherein the screening occurs in a multi-well plate as part of a high-throughput screen.

41. A method of claim 34, wherein the biologically active TL-γ comprises a motor domain having identity to the motor domain of *Thermomyces lanuginosus* TL-γ.

42. A method of claim 34, wherein the biologically active TL-γ comprises an amino acid sequence of a TL-γ motor domain of SEQ ID NO:1.

43. A kit for screening for modulators of TL-γ, the kit comprising;

(i) a container holding biologically active TL-γ; and

(ii) instructions for assaying for TL-γ activity, wherein the TL-γ activity is plus end-directed microtubule motor activity, bindig activity, or ATPase activity.

44. A kit of claim 43, wherein the biologically active TL-γ has identity to a TL-γ derived from *Thermomyces lanuginosus*.

45. A kit of claim 43, wherein the biologically active TL-γ comprises a motor domain that has identity to the motor domain of *Thermomyces lanuginosus* TL-γ.

46. A kit of claim 43, wherein the biologically active TL-γ is recombinant.

47. In a computer system, a method of screening for mutations of microtubule motor protein genes, the method comprising the steps of:

(i) entering at least 30 nucleotides of a first nucleic acid sequence encoding a plus end-directed microtubule motor protein having a nucleotide sequence of SEQ ID NO:2 and conservatively modified versions thereof;

(ii) comparing the first nucleic acid sequence with a second nucleic acid sequence having substantial identity to the first nucleic acid sequence; and

(iii) identifying nucleotide differences between the first and second nucleic acid sequences.

48. In a computer system, a method for identifying a three-dimensional structure of microtubule motor proteins, the method comprising the steps of:

(i) entering an amino acid sequence of at least 10 amino acids of a plus end-directed microtubule motor protein or a nucleotide sequence of at least 30 nucleotides of a gene encoding the motor protein, the protein having an amino acid sequence of SEQ ID NO:1 and conservatively modified versions thereof; and

(ii) generating a three-dimensional structure of the protein encoded by the amino acid sequence.

49. An isolated nucleic acid comprising a sequence which has greater than 60% sequence identity with SEQ ID NO:2.

50. An isolated nucleic acid comprising a sequence which has greater than 70% sequence identity with nucleotides 1-1071 of SEQ ID NO:2.

51. An isolated nucleic acid comprising a sequence which has greater than 60% sequence identity with nucleotides 1327-1803 of SEQ ID NO:2.

52. An isolated nucleic acid comprising a sequence which has greater than 60% sequence identity with nucleotides 1804-2352 of SEQ ID NO:2.

53. An isolated nucleic acid sequence which hybridizes under stringent conditions to a complement of SEQ ID NO:2.

54. An isolated nucleic acid sequence which hybridizes under stringent conditions to a complement of nucleotides 1-1071 of SEQ ID NO:2.

55. An isolated nucleic acid sequence which hybridizes under stringent conditions to a complement of nucleotides 1327-1803 of SEQ ID NO:2.

56. An isolated nucleic acid sequence which hybridizes under stringent conditions to a complement of nucleotides 1804-2352 of SEQ ID NO:2.

57. An method for identifying sequence changes among homologs comprising: sequencing the nucleic acid of any one of claims 49-53 and identifying sequence changes compared to the corresponding sequence of SEQ ID NO:2.

58. A method for identifying agents which binds to TL-γ or portions thereof, wherein a portion refers to the stalk, motor, or tail domain of TL-γ, comprising: adding a candidate agent to TL-γ or a portion thereof and identifying any agents which bind thereto.

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